

## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

(i) APPLICANT: UNITED BIOMEDICAL INC., et al.

(ii) TITLE OF INVENTION: PEPTIDE COMPOSITION AS  
IMMUNOGEN FOR THE TREATMENT OF ALLERGY

(iii) NUMBER OF SEQUENCES: 91

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Morgan &amp; Finnegan # 9A

(B) STREET: 345 Park Avenue

(C) CITY: New York

(D) STATE: NY

(E) COUNTRY: USA

(F) ZIP: 10154-0053 Sub # 10 A

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk

(B) COMPUTER: IBM PC compatible

(C) OPERATING SYSTEM: PC-DOS/MS-DOS

(D) SOFTWARE: WORD 8.0

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: To be assigned

(B) FILING DATE: 21-JUNE-1999

(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: US 09/100,287

(B) FILING DATE: 20-JUN-1998

(C) CLASSIFICATION: 514

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: MARIA C.H.LIN

(B) REGISTRATION NUMBER: 29,323

(C) REFERENCE/DOCKET NUMBER: 1151-4153PC1

09701623-120100

(B) TELEFAX: 212-751-6849

(D) TOPOLOGY: linear

(A) NAME/KEY: 1 chain of human IgE

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

His Thr Phe Glu Asp Ser Thr Lys Lys Cys Ala Asp  
100 105

Ser Asn Pro Arg Gly Val Ser Ala Tyr Leu Ser Arg  
 110 115 120  
 Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys Ser Pro  
 125 130  
 Thr Ile Thr Cys Leu Val Val Asp Leu Ala Pro Ser  
 135 140  
 Lys Gly Thr Val Asn Leu Thr Trp Ser Arg Ala Ser  
 145 150 155  
 Gly Lys Pro Val Asn His Ser Thr Arg Lys Glu Glu  
 160 165  
 Lys Gln Arg Asn Gly Thr Leu Thr Val Thr Ser Thr  
 170 175 180  
 Leu Pro Val Gly Thr Arg Asp Trp Ile Glu Gly Glu  
 185 190  
 Thr Tyr Gln Cys Arg Val Thr His Pro His Leu Pro  
 195 200  
 Arg Ala Leu Met Arg Ser Thr Thr Lys Thr Ser Gly  
 205 210 215  
 Pro Arg Ala Ala Pro Glu Val Tyr Ala Phe Ala Thr  
 220 225  
 Pro Glu Trp Pro Gly Ser Arg Asp Lys Arg Thr Leu  
 230 235 240  
 Ala Cys Leu Ile Gln Asn Phe Met Pro Glu Asp Ile  
 245 250  
 Ser Val Gln Trp Leu His Asn Glu Val Gln Leu Pro  
 255 260  
 Asp Ala Arg His Ser Thr Thr Gln Pro Arg Lys Thr  
 265 270 275  
 Lys Gly Ser Gly Phe Phe Val Phe Ser Arg Leu Glu  
 280 285  
 Val Thr Arg Ala Glu Trp Gln Glu Lys Asp Glu Phe  
 290 295 300  
 Ile Cys Arg Ala Val His Glu Ala Ala Ser Pro Ser  
 305 310  
 Gln Thr Val Gln Arg Ala Val Ser Val Asn Pro Gly  
 315 320  
 Lys  
 325

(2) INFORMATION FOR SEQ ID NO:2:

35

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(D) TOPOLOGY: linear

(A) NAME/KEY: 1 chain of dog IgE

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Ala	Cys	Ala	Leu	Asn	Phe	Ile	Pro	Pro	Thr	Val	Lys	
1				5					10			
Leu	Phe	His	Ser	Ser	Cys	Asn	Pro	Val	Gly	Asp	Thr	
		15					20					
His	Thr	Thr	Ile	Gln	Leu	Leu	Cys	Leu	Ile	Ser	Gly	
25				30						35		
Tyr	Val	Pro	Gly	Asp	Met	Glu	Val	Ile	Trp	Leu	Val	
			40					45				
Asp	Gly	Gln	Lys	Ala	Thr	Asn	Ile	Phe	Pro	Tyr	Thr	
	50					55					60	
Ala	Pro	Gly	Thr	Lys	Glu	Gly	Asn	Val	Thr	Ser	Thr	
				65					70			
His	Ser	Glu	Leu	Asn	Ile	Thr	Gln	Gly	Glu	Trp	Val	
		75					80					
Ser	Gln	Lys	Thr	Tyr	Thr	Cys	Gln	Gly	Phe	Thr	Phe	
85					90					95		
Lys	Asp	Glu	Ala	Arg	Lys	Cys	Ser	Glu	Ser	Asp	Pro	
			100					105				
Arg	Gly	Val	Thr	Ser	Tyr	Leu	Ser	Pro	Pro	Ser	Pro	
	110					115					120	
Leu	Asp	Leu	Tyr	Val	His	Lys	Ala	Pro	Lys	Ile	Thr	
				125					130			
Cys	Leu	Val	Val	Asp	Leu	Ala	Thr	Met	Glu	Gly	Met	
	135						140					

[illegible]

Asn Leu Thr Trp Tyr Arg Glu Ser Lys Glu Pro Val  
 145 150 155  
 Asn Pro Gly Pro Leu Asn Lys Lys Asp His Phe Asn  
 160 165  
 Gly Thr Ile Thr Val Thr Ser Thr Leu Pro Val Asn  
 170 175 180  
 Thr Asn Asp Trp Ile Glu Gly Glu Thr Tyr Tyr Cys  
 185 190  
 Arg Val Thr His Pro His Leu Pro Lys Asp Ile Val  
 195 200  
 Arg Ser Ile Ala Lys Ala Pro Gly Lys Arg Ala Pro  
 205 210 215  
 Pro Asp Val Tyr Leu Phe Leu Pro Pro Glu Glu Glu  
 220 225  
 Gln Gly Thr Lys Asp Arg Val Thr Leu Thr Cys Leu  
 230 235 240  
 Ile Gln Asn Phe Phe Pro Ala Asp Ile Ser Val Gln  
 245 250  
 Trp Leu Arg Asn Asp Ser Pro Ile Gln Thr Asp Gln  
 255 260  
 Tyr Thr Thr Thr Gly Pro His Lys Val Ser Gly Ser  
 265 270 275  
 Arg Pro Ala Phe Phe Ile Phe Ser Arg Leu Glu Val  
 280 285  
 Ser Arg Val Asp Trp Glu Gln Lys Asn Lys Phe Thr  
 290 295 300  
 Cys Gln Val Val His Glu Ala Leu Ser Gly Ser Arg  
 305 310

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 313 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

## (ix) FEATURE:

(A) NAME/KEY: i chain of rat IgE

(x) REFERENCE: Steen et al., J Mol Biol, 1984;  
177:19-32.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

5  
Ala Arg Pro Val Asn Ile Thr Lys Pro Thr Val Asp  
1 5 10  
Leu Leu His Ser Ser Cys Asp Pro Asn Ala Phe His  
15 20  
10 Ser Thr Ile Gln Leu Tyr Cys Phe Val Tyr Gly His  
25 30 35  
Ile Gln Asn Asp Val Ser Ile His Trp Leu Met Asp  
40 45  
Asp Arg Lys Ile Tyr Asp Thr His Ala Gln Asn Val  
50 55 60  
15 Leu Ile Lys Glu Glu Gly Lys Leu Ala Ser Thr Tyr  
65 70  
Ser Arg Leu Asn Ile Thr Gln Gln Gln Trp Met Ser  
75 80  
Glu Ser Thr Phe Thr Cys Lys Val Thr Ser Gln Gly  
85 90 95  
20 Glu Asn Tyr Trp Ala His Thr Arg Arg Cys Ser Asp  
100 105  
Asp Glu Pro Arg Gly Val Ile Thr Tyr Leu Ile Pro  
110 115 120  
25 Pro Ser Pro Leu Asp Leu Tyr Glu Asn Gly Thr Pro  
125 130  
Lys Leu Thr Cys Leu Val Leu Asp Leu Glu Ser Glu  
135 140  
Glu Asn Ile Thr Val Thr Trp Val Arg Glu Arg Lys  
145 150 155  
30 Lys Ser Ile Gly Ser Ala Ser Gln Arg Ser Thr Lys  
160 165  
His His Asn Ala Thr Thr Ser Ile Thr Ser Ile Leu  
170 175 180  
Pro Val Asp Ala Lys Asp Trp Ile Glu Gly Glu Gly  
185 190  
35

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Tyr Gln Cys Arg Val Asp His Pro His Phe Pro Lys  
 195 200  
 Pro Ile Val Arg Ser Ile Thr Lys Ala Leu Gly Leu  
 205 210 215  
 Arg Ser Ala Pro Glu Val Tyr Val Phe Leu Pro Pro  
 220 225  
 Glu Glu Glu Glu Lys Asn Lys Arg Thr Leu Thr Cys  
 230 235 240  
 Leu Ile Gln Asn Phe Phe Pro Glu Asp Ile Ser Val  
 245 250  
 Gln Trp Leu Gln Asp Ser Lys Leu Ile Pro Lys Ser  
 255 260  
 Gln His Ser Thr Thr Thr Pro Leu Lys Thr Asn Gly  
 265 270 275  
 Ser Asn Gln Arg Phe Phe Ile Phe Ser Arg Leu Glu  
 280 285  
 Val Thr Lys Ala Leu Trp Thr Gln Thr Lys Gln Phe  
 290 295 300  
 Thr Cys Arg Val Ile His Glu Ala Leu Arg Glu Pro  
 305 310  
 Arg

(2) INFORMATION FOR SEQ ID NO:4:

20

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 313 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

25

(ii) MOLECULE TYPE: protein

(ix) FEATURE:

- (A) NAME/KEY: i chain of mouse IgE

30

- (x) REFERENCE: Ishida et al., EMBO, 1982;  
1:1117-1123

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

35

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Val Arg Pro Val Thr His Ser Leu Ser Pro Pro Trp  
 1 5 10  
 Ser Tyr Ser Ile His Arg Cys Asp Pro Asn Ala Phe  
 15 20  
 His Ser Thr Ile Gln Leu Tyr Cys Phe Ile Tyr Gly  
 25 30 35  
 His Ile Leu Asn Asp Val Ser Val Ser Trp Leu Met  
 40 45  
 Asp Asp Arg Glu Ile Thr Asp Thr Leu Ala Gln Thr  
 50 55 60  
 Val Leu Ile Lys Glu Glu Gly Lys Leu Ala Ser Thr  
 65 70  
 Cys Ser Lys Leu Asn Ile Thr Glu Gln Gln Trp Met  
 75 80  
 Ser Glu Ser Thr Phe Thr Cys Arg Val Thr Ser Gln  
 85 90 95  
 Gly Cys Asp Tyr Leu Ala His Thr Arg Arg Cys Pro  
 100 105  
 Asp His Glu Pro Arg Gly Ala Ile Thr Tyr Leu Ile  
 110 115 120  
 Pro Pro Ser Pro Leu Asp Leu Tyr Gln Asn Gly Ala  
 125 130  
 Pro Lys Leu Thr Cys Leu Val Val Asp Leu Glu Ser  
 135 140  
 Glu Lys Asn Val Asn Val Thr Trp Asn Gln Glu Lys  
 145 150 155  
 Lys Thr Ser Val Ser Ala Ser Gln Trp Tyr Thr Lys  
 160 165  
 His His Asn Asn Ala Thr Thr Ser Ile Thr Ser Ile  
 170 175 180  
 Leu Pro Val Val Ala Lys Asp Trp Ile Glu Gly Tyr  
 185 190  
 Gly Tyr Gln Cys Ile Val Asp Arg Pro Asp Phe Pro  
 195 200  
 Lys Pro Ile Val Arg Ser Ile Thr Lys Thr Pro Gly  
 205 210 215  
 Gln Arg Ser Ala Pro Glu Val Tyr Val Phe Pro Pro  
 220 225  
 Pro Glu Glu Glu Ser Glu Asp Lys Arg Thr Leu Thr  
 230 235 240

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Cys Leu Ile Gln Asn Phe Phe Pro Glu Asp Ile Ser  
 245 250  
 Val Gln Trp Leu Gly Asp Gly Lys Leu Ile Ser Asn  
 255 260  
 Ser Gln His Ser Thr Thr Thr Pro Leu Lys Ser Asn  
 265 270 275  
 Gly Asn Gln Gly Phe Phe Ile Phe Ser Arg Leu Glu  
 280 285  
 Val Ala Lys Thr Leu Trp Thr Gln Arg Lys Gln Phe  
 290 295 300  
 Thr Cys Gln Val Ile His Glu Ala Leu Gln Lys Pro  
 305 310  
 Arg

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Cys Gly Glu Thr Tyr Gln Ser Arg Val Thr His Pro  
 1 5 10  
 His Leu Pro Arg Ala Leu Met Arg Ser Thr Thr Lys  
 15 20  
 Cys  
 25

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Cys Gly Glu Thr Tyr Tyr Ser Arg Val Thr His Pro  
1 5 10  
5 His Leu Pro Lys Asp Ile Val Arg Ser Ile Ala Lys  
15 20  
Cys  
25

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Cys Gly Glu Gly Tyr Gln Ser Arg Val Asp His Pro  
1 5 10  
20 His Phe Pro Lys Pro Ile Val Arg Ser Ile Thr Lys  
15 20  
Cys  
25

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Cys Gly Tyr Gly Tyr Gln Ser Ile Val Asp Arg Pro  
 1 5 10  
 Asp Phe Pro Lys Pro Ile Val Arg Ser Ile Thr Leu  
 15 20  
 Cys  
 25

5

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

10

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr  
 1 5 10  
 Ile Ile Thr Thr Ile Asp  
 15

20

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

25

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

30

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1

35

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(D) OTHER INFORMATION: /note= "Ile, Met or  
Leu"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 2

(D) OTHER INFORMATION: /note= "Ser or Thr"

5

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 5

(D) OTHER INFORMATION: /note= "Lys or Arg"

10

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 6

(D) OTHER INFORMATION: /note= "Gly or Thr"

15

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 10

(D) OTHER INFORMATION: /note= "His or Thr"

20

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 11

(D) OTHER INFORMATION: /note= "Lys or Arg"

25

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 12

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

30

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 14

(D) OTHER INFORMATION: /note= "Gly or Thr"

35

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 15

(D) OTHER INFORMATION: /note= "Ile, Met or Val"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Xaa Xaa Glu Ile Xaa Xaa Val Ile Val Xaa Xaa Xaa  
1 5 10  
5 Glu Xaa Xaa  
15

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 3

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 4

(D) OTHER INFORMATION: /note= "Ser or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 7

(D) OTHER INFORMATION: /note= "Lys or Arg"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 8

(D) OTHER INFORMATION: /note= "Gly or Thr"



(D) OTHER INFORMATION: /note= "His or Thr"

5

(D) OTHER INFORMATION: /note= "Lys or Arg"

10

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

15

(D) OTHER INFORMATION: /note= "Gly Or Thr"

20

(D) OTHER INFORMATION: /note= "Ile, Met or Val"

25

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15

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(D) TOPOLOGY: linear

35

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Thr Ile Asn Lys Pro Lys Gly Tyr Val Gly Lys Glu  
1 5 10

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Thr Ala  
1 5 10  
Thr Tyr Gln Phe  
15

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 45 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr  
1 5 10  
Ile Ile Thr Thr Ile Asp Gly Gly Cys Gly Glu Thr  
15 20

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Tyr Gln Ser Arg Val Thr His Pro His Leu Pro Arg  
 25 30 35  
 Ala Leu Met Arg Ser Thr Thr Lys Cys  
 40 45

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 63 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Thr Ala  
 1 5 10  
 Thr Tyr Gln Phe Gly Gly Lys Lys Lys Ile Ile Thr  
 15 20  
 Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr Ile Asp  
 25 30 35  
 Gly Gly Cys Gly Glu Thr Tyr Gln Ser Arg Val Thr  
 40 45  
 His Pro His Leu Pro Arg Ala Leu Met Arg Ser Thr  
 50 55 60  
 Thr Lys Cys

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide



(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Pro Pro Xaa Pro Xaa Pro  
1 5

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 59 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Thr	Ile	Asn	Lys	Pro	Lys	Gly	Tyr	Val	Gly	Lys	Glu
1				5					10		
Gly	Gly	Lys	Lys	Lys	Ile	Ile	Thr	Ile	Thr	Arg	Ile
		15					20				
Ile	Thr	Ile	Ile	Thr	Thr	Ile	Asp	Gly	Gly	Cys	Gly
25				30					35		
Glu	Thr	Tyr	Gln	Ser	Arg	Val	Thr	His	Pro	His	Leu
			40				45				
Pro	Arg	Ala	Leu	Met	Arg	Ser	Thr	Thr	Lys	Cys	
	50					55					

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 46 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4

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(D) OTHER INFORMATION: /note= "Ser or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 7

(D) OTHER INFORMATION: /note= "Lys or Arg"

5

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 8

(D) OTHER INFORMATION: /note= "Gly Or Thr"

10

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 12

(D) OTHER INFORMATION: /note= "His Or Thr"

15

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 13

(D) OTHER INFORMATION: /note= "Lys or Arg"

20

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 16

(D) OTHER INFORMATION: /note= "Gly Or Thr"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

25

Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa  
1 5 10

Xaa Ile Glu Xaa Ile Leu Phe Gly Gly Cys Gly Glu  
15 20

30

Thr Tyr Gln Ser Arg Val Thr His Pro His Leu Pro  
25 30 35

Arg Ala Leu Met Arg Ser Thr Thr Lys Cys  
40 45

35

(2) INFORMATION FOR SEQ ID NO:19:

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- 09701623.120100
- 0 (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 63 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear
- 5 (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 21  
(D) OTHER INFORMATION: /note= "Ser or Thr"
- 10 (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 24  
(D) OTHER INFORMATION: /note= "Lys or Arg"
- 15 (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 25  
(D) OTHER INFORMATION: /note= "Gly Or Thr"
- 20 (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 29  
(D) OTHER INFORMATION: /note= "His Or Thr"
- 25 (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 30  
(D) OTHER INFORMATION: /note= "Lys or Arg"
- 30 (ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 33  
(D) OTHER INFORMATION: /note= "Gly Or Thr"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Thr Ala  
 1 5 10  
 Thr Gln Phe Gly Gly Ile Ser Ile Xaa Glu Ile Xaa  
 15 20  
 Xaa Val Ile Val Xaa Xaa Ile Glu Xaa Ile Leu Phe  
 25 30 35  
 Gly Gly Cys Gly Glu Thr Tyr Gln Ser Arg Val Thr  
 40 45  
 His Pro His Leu Pro Arg Ala Leu Met Arg Ser Thr  
 50 55 60  
 Thr Lys Cys

10

## (2) INFORMATION FOR SEQ ID NO:20:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15

## (ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

20

(A) NAME/KEY: Modified-site

(B) LOCATION: 18

(D) OTHER INFORMATION: /note= "Ser or Thr"

## (ix) FEATURE:

25

(A) NAME/KEY: Modified-site

(B) LOCATION: 21

(D) OTHER INFORMATION: /note= "Lys or Arg"

## (ix) FEATURE:

30

(A) NAME/KEY: Modified-site

(B) LOCATION: 22

(D) OTHER INFORMATION: /note= "Gly or Thr"

## (ix) FEATURE:

35

(A) NAME/KEY: Modified-site

(B) LOCATION: 26

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(D) OTHER INFORMATION: /note= "His or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 27

(D) OTHER INFORMATION: /note= "Lys or Arg"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 30

(D) OTHER INFORMATION: /note= "Gly or Thr"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Thr	Ile	Asn	Lys	Pro	Lys	Gly	Tyr	Val	Gly	Lys	Glu
1				5					10		
Gly	Gly	Ile	Ser	Ile	Xaa	Glu	Ile	Xaa	Xaa	Val	Ile
		15					20				
Val	Xaa	Xaa	Ile	Glu	Xaa	Ile	Leu	Phe	Gly	Gly	Cys
25					30					35	
Gly	Glu	Thr	Tyr	Gln	Ser	Arg	Val	Thr	His	Pro	His
			40					45			
Leu	Pro	Arg	Ala	Leu	Met	Arg	Ser	Thr	Thr	Lys	Cys
		50				55					60

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 42 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 1

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 2

(D) OTHER INFORMATION: /note= "Ser or Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 5

(D) OTHER INFORMATION: /note= "Lys or Arg"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 6

(D) OTHER INFORMATION: /note= "Gly or Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 10

(D) OTHER INFORMATION: /note= "His or Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 11

(D) OTHER INFORMATION: /note= "Lys or Arg"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 12

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 14

(D) OTHER INFORMATION: /note= "Gly or Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 15

(D) OTHER INFORMATION: /note= "Ile, Met or Val"

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Xaa Xaa Glu Ile Xaa Xaa Val Ile Val Xaa Xaa Xaa  
 1 5 10  
 Glu Xaa Xaa Gly Gly Cys Gly Glu Thr Tyr Gln Ser  
 15 20  
 Arg Val Thr His Pro His Leu Pro Arg Ala Leu Met  
 5 25 30 35  
 Arg Ser Thr Thr Lys Cys  
 40

## (2) INFORMATION FOR SEQ ID NO:22:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 60 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 19
- (D) OTHER INFORMATION: /note= "Ile, Met or Leu"

## (ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 20
- (D) OTHER INFORMATION: /note= "Ser or Thr"

## (ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 23
- (D) OTHER INFORMATION: /note= "Lys or Arg"

## (ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 24
- (D) OTHER INFORMATION: /note= "Gly or Thr"

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- 09701623.120100
- 0 (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 28  
 (D) OTHER INFORMATION: /note= "His or Thr"
- 5 (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 29  
 (D) OTHER INFORMATION: /note= "Lys or Arg"
- 10 (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 30  
 (D) OTHER INFORMATION: /note= "Ile, Met or Leu"
- 15 (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 32  
 (D) OTHER INFORMATION: /note= "Gly or Thr"
- 20 (ix) FEATURE:  
 (A) NAME/KEY: Modified-site  
 (B) LOCATION: 33  
 (D) OTHER INFORMATION: /note= "Ile, Met or Val"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:
- 25 Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Thr Ala  
 1 5 10  
 Thr Tyr Gln Phe Gly Gly Xaa Xaa Glu Ile Xaa Xaa  
 15 20  
 Val Ile Val Xaa Xaa Xaa Glu Xaa Xaa Gly Gly Cys  
 25 30 35  
 30 Gly Glu Thr Tyr Gln Ser Arg Val Thr His Pro His  
 40 45  
 Leu Pro Arg Ala Leu Met Arg Ser Thr Thr Lys Cys  
 50 55 60
- 35



◦ (2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 56 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

5

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "Ile, Met or Leu"

10

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 16
- (D) OTHER INFORMATION: /note= "Ser or Thr"

15

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 19
- (D) OTHER INFORMATION: /note= "Lys or Arg"

20

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 20
- (D) OTHER INFORMATION: /note= "Gly or Thr"

25

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 24
- (D) OTHER INFORMATION: /note= "His or Thr"

30

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 25
- (D) OTHER INFORMATION: /note= "Lys or Arg"

35

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## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 26

(D) OTHER INFORMATION: /note= "Ile, Met or Leu"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 28

(D) OTHER INFORMATION: /note= "Gly or Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 29

(D) OTHER INFORMATION: /note= "Ile, Met, or Val"

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Thr Ile Asn Lys Pro Lys Gly Tyr Val Gly Lys Glu  
1 5 10  
Gly Gly Xaa Xaa Glu Ile Xaa Xaa Val Ile Val Xaa  
15 20  
Xaa Xaa Glu Xaa Xaa Gly Gly Cys Gly Glu Thr Tyr  
25 30 35  
Gln Ser Arg Val Thr His Pro His Leu Pro Arg Ala  
40 45  
Leu Met Arg Ser Thr Thr Lys Cys  
50 55

## (2) INFORMATION FOR SEQ ID NO:24:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 46 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 4

(D) OTHER INFORMATION: /note= "Ser or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 7

(D) OTHER INFORMATION: /note= "Lys or Arg"

5

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 8

(D) OTHER INFORMATION: /note= "Gly or Thr"

10

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 12

(D) OTHER INFORMATION: /note= "His or Thr"

15

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 13

(D) OTHER INFORMATION: /note= "Lys or Arg"

20

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 16

(D) OTHER INFORMATION: /note= "Gly or Thr"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

25

Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa  
1 5 10

Xaa Ile Glu Xaa Ile Leu Phe Gly Gly Cys Gly Tyr  
15 20

30

Gly Tyr Gln Ser Ile Val Asp His Pro Asp Phe Pro  
25 30 35

Lys Pro Ile Val Arg Ser Ile Thr Lys Cys  
40 45

35

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## (2) INFORMATION FOR SEQ ID NO:25:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 45 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

## 5 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr  
 1 5 10  
 10 Ile Ile Thr Thr Ile Asp Gly Gly Cys Gly Tyr Gly  
 15 20  
 Tyr Gln Ser Ile Val Asp His Pro Asp Phe Pro Lys  
 25 30 35  
 15 Pro Ile Val Arg Ser Ile Thr Lys Cys  
 40 45

## (2) INFORMATION FOR SEQ ID NO:26:

## 20 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 45 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

## 25 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr  
 1 5 10  
 30 Ile Ile Thr Thr Ile Asp Gly Gly Cys Gly Glu Thr  
 15 20  
 Tyr Tyr Ser Arg Val Thr His Pro His Leu Pro Lys  
 25 30 35

35

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Asp Ile Val Arg Ser Ile Ala Lys Cys  
40 45

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 46 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

10

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
(B) LOCATION: 1  
(D) OTHER INFORMATION: /note= "Met or Leu"

15

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
(B) LOCATION: 2  
(D) OTHER INFORMATION: /note= "Thr"

20

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
(B) LOCATION: 7  
(D) OTHER INFORMATION: /note= "Arg"

25

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
(B) LOCATION: 8  
(D) OTHER INFORMATION: /note= "Thr"

30

(ix) FEATURE:

- (A) NAME/KEY: Modified-site  
(B) LOCATION: 12  
(D) OTHER INFORMATION: /note= "Thr"

35

(ix) FEATURE:

- (A) NAME/KEY: Modified-site

(B) LOCATION: 13  
(D) OTHER INFORMATION: /note= "Arg"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 14  
(D) OTHER INFORMATION: /note= "Met or Leu"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 16  
(D) OTHER INFORMATION: /note= "Thr"

(ix) FEATURE:  
(A) NAME/KEY: Modified-site  
(B) LOCATION: 17  
(D) OTHER INFORMATION: /note= "Met or Val"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Ile	Ser	Ile	Ser	Glu	Ile	Lys	Gly	Val	Ile	Val	His
1				5				10			
Lys	Ile	Glu	Gly	Ile	Leu	Phe	Gly	Gly	Cys	Gly	Glu
		15				20					
Thr	Tyr	Tyr	Ser	Arg	Val	Thr	His	Pro	His	Leu	Pro
25				30				35			
Lys	Asp	Ile	Val	Arg	Ser	Ile	Ala	Lys	Cys		
			40					45			

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 49 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Cys Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr  
 1 5 10  
 Leu Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg  
 15 20  
 Lys Ser Pro Thr Ile Thr Ser Leu Val Val Asp Leu  
 25 30 35  
 Ala Pro Ser Lys Gly Thr Val Asn Leu Thr Trp Ser  
 40 45  
 Arg

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Gln Gly His Thr Phe Glu Asp Ser Thr Lys Lys Cys  
 1 5 10  
 Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr Leu  
 15 20  
 Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys  
 25 30 35  
 Ser Pro Thr Ile Thr Ser Leu Val Val Asp Leu Ala  
 40 45  
 Pro Ser Lys Gly Thr Val Asn Leu Thr Trp Ser Arg  
 50 55 60

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 64 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

5 Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
1 5 10  
Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
15 20  
Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
10 25 30 35  
Phe Ile Arg Lys Ser Pro Thr Ile Thr Ser Leu Val  
40 45  
Val Asp Leu Ala Pro Ser Lys Gly Thr Val Asn Leu  
50 55 60  
Thr Trp Ser Arg

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 76 amino acids

20 (B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

25 Gln Lys His Trp Leu Ser Asp Arg Thr Tyr Thr Ser  
1 5 10  
Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
15 20  
30 Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
25 30 35  
Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
40 45  
Phe Ile Arg Lys Ser Pro Thr Ile Thr Ser Leu Val  
50 55 60

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Val Asp Leu Ala Pro Ser Lys Gly Thr Val Asn Leu  
   65  70

Thr Trp Ser Arg  
                         75

(2) INFORMATION FOR SEQ ID NO:32:

- 5 (i) SEQUENCE CHARACTERISTICS:  
       (A) LENGTH: 35 amino acids  
       (B) TYPE: amino acid  
       (D) TOPOLOGY: linear

- 10 (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Cys Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr  
   1  5  10  
 15 Leu Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg  
                         15  20  
 Lys Ser Pro Thr Ile Thr Ser Leu Val Val Asp  
   25  30  35

20 (2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:  
       (A) LENGTH: 46 amino acids  
       (B) TYPE: amino acid  
       (D) TOPOLOGY: linear

- 25 (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Gln Gly His Thr Phe Glu Asp Ser Thr Lys Lys Cys  
   1  5  10  
 Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr Leu  
                         15  20

35

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Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys  
 25 30 35  
 Ser Pro Thr Ile Thr Ser Leu Val Val Asp  
 40 45

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 50 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
 1 5 10  
 Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
 15 20  
 Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
 25 30 35  
 Phe Ile Arg Lys Ser Pro Thr Ile Thr Ser Leu Val  
 40 45  
 Val Asp  
 50

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 62 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Gln Lys His Trp Leu Ser Asp Arg Thr Tyr Thr Ser  
 1 5 10  
 Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
 15 20  
 Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
 25 30 35  
 Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
 40 45  
 Phe Ile Arg Lys Ser Pro Thr Ile Thr Ser Leu Val  
 50 55 60  
 Val Asp

## (2) INFORMATION FOR SEQ ID NO:36:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Cys Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr  
 1 5 10  
 Leu Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg  
 15 20  
 Lys Ser Pro Thr Ile  
 25

## (2) INFORMATION FOR SEQ ID NO:37:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 40 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

5 Gln Gly His Thr Phe Glu Asp Ser Thr Lys Lys Cys  
 1 5 10  
 5 Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr Leu  
 15 20  
 Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys  
 25 30 35  
 Ser Pro Thr Ile  
 40  
 10

(2) INFORMATION FOR SEQ ID NO:38:

15 (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 44 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

25 Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
 1 5 10  
 Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
 15 20  
 Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
 25 30 35  
 Phe Ile Arg Lys Ser Pro Thr Ile  
 40  
 30

(2) INFORMATION FOR SEQ ID NO:39:

35 (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 56 amino acids

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(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

5 Gln Lys His Trp Leu Ser Asp Arg Thr Tyr Thr Ser  
1 5 10  
Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
15 20  
Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
10 25 30 35  
Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
40 45  
Phe Ile Arg Lys Ser Pro Thr Ile  
50 55

15

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 76 amino acids

20

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

25

Gln Lys His Trp Leu Ser Asp Arg Thr Tyr Thr Cys  
1 5 10  
Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
15 20  
Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
30 25 30 35  
Ser Ala Tyr Leu Ser Arg Pro Ser Pro Phe Asp Leu  
40 45  
Phe Ile Arg Lys Ser Pro Thr Ile Thr Cys Leu Val  
50 55 60

35

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Val Asp Leu Ala Pro Ser Lys Gly Thr Val Asn Leu  
                                 65                                70  
 Thr Trp Ser Arg  
                                 75

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Cys Lys Gln Arg Asn Gly Thr Leu Thr Cys  
       1                                5                                10

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 45 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Gln Lys His Trp Leu Ser Asp Arg Thr Tyr Thr Cys  
       1                                5                                10  
 Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser  
                                 15                                20  
 Thr Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val  
       25                                30                                35  
 Ser Ala Tyr Leu Ser Arg Pro Ser Pro  
                                 40                                45

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(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 34 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

10 Cys Pro Ser Lys Gly Thr Val Asn Leu Thr Trp Ser  
 1 5 10  
 Arg Ala Ser Gly Lys Pro Val Asn His Ser Thr Arg  
 15 20  
 Lys Glu Glu Lys Gln Arg Asn Gly Thr Cys  
 15 25 30

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

30 Cys Pro Val Gly Thr Arg Asp Trp Ile Glu Gly Glu  
 1 5 10  
 Thr Tyr Gln Cys Arg Val Thr His Pro His Leu Pro  
 15 20  
 Arg Ala Leu Met Arg Ser Thr Thr Cys  
 25 30

## (2) INFORMATION FOR SEQ ID NO:45:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Thr Thr Lys Thr Ser Gly Pro Arg Ala Ala Pro Glu Val  
1 5 10

## (2) INFORMATION FOR SEQ ID NO:46:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Cys Trp Ser Arg Ala Ser Gly Lys Pro Val Cys Asn His Ser  
1 5 10

## (2) INFORMATION FOR SEQ ID NO:47:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

35

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Cys Ser Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg  
 1 5 10  
 Lys Ser Pro Thr Ile Thr Cys  
 15

5

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

15

Cys Val Gly Thr Arg Asp Trp Ile Glu Gly Glu Pro Cys  
 1 5 10

(2) INFORMATION FOR SEQ ID NO:49:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

30

Cys Pro Pro Val Gly Thr Arg Asp Trp Ile Glu Gly  
 1 5 10  
 Glu Pro Cys  
 15

35

(2) INFORMATION FOR SEQ ID NO:50:

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- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 16 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Cys Lys Glu Glu Lys Gln Arg Asn Gly Thr Leu Thr  
1 5 10

Val Thr Ser Cys  
15

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Lys Glu Glu Lys Gln Arg Asn Gly  
1 5

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Cys Trp Ser Arg Ala Ser Gly Lys Pro Val Cys  
1 5 10

5 (2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

15 Pro Thr Ile Thr Cys Leu Val Leu Asp Leu Ala Pro  
1 5 10  
Ser Lys Gly Thr Val Asn Leu Thr Cys  
15 20

20

(2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids

(B) TYPE: amino acid

25

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

30

Pro Thr Ile Thr Cys Leu Val Leu Asp Leu Ala Pro  
1 5 10  
Ser Lys Gly Thr  
15

35

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(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Thr Ser Thr Leu Pro Val Gly Thr Arg Asp Trp Ile  
 1 5 10  
 Glu Gly Glu Thr Tyr Gln Cys Arg Val Thr His Pro  
 15 20  
 His  
 25

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Pro Thr Ile Thr Ser Leu Val Leu Cys Leu Ala Pro  
 1 5 10  
 Ser Lys Gly Cys  
 15

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

5 Cys Val Asn Leu Thr Trp Ser Arg Ala Ser Gly Lys  
 1 5 10  
 Pro Val Asn His Ser Thr Arg Lys Glu Glu Cys  
 15 20

10

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 53 amino acids

(B) TYPE: amino acid

15

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

20

Cys Thr Trp Ser Arg Ala Ser Gly Lys Pro Val Asn  
 1 5 10

His Ser Thr Arg Lys Glu Glu Lys Gln Arg Asn Gly  
 15 20

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Thr Leu Thr Val Thr Ser Thr Leu Pro Val Gly Thr  
 25 30 35

Arg Asp Trp Ile Glu Gly Glu Thr Tyr Gln Cys Arg  
 40 45

Val Thr His Pro His

30

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(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Lys Thr Lys Gly Ser Gly Phe Phe Val Phe  
1 5 10

(2) INFORMATION FOR SEQ ID NO:60:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 amino acids
  - (B) TYPE: amino acid
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4
- (D) OTHER INFORMATION: /note= "Ser or Thr"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 7
- (D) OTHER INFORMATION: /note= "Lys or Arg"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 8
- (D) OTHER INFORMATION: /note= "Gly or Thr"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 12

(D) OTHER INFORMATION: /note= "His or Thr"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 13

(D) OTHER INFORMATION: /note= "Lys or Arg"

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 16

(D) OTHER INFORMATION: /note= "Gly or Thr"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa  
1 5 10  
Xaa Ile Glu Xaa Ile Leu Phe  
15

(2) INFORMATION FOR SEQ ID NO:61:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu  
1 5 10  
Glu Gly Val  
15

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

5 Gly Ile Leu Glu Ser Arg Gly Ile Lys Ala Arg Ile  
1 5 10  
Thr His Val Asp Thr Glu Ser Tyr  
15 20

10 (2) INFORMATION FOR SEQ ID NO:63:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
15 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

20 Lys Lys Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile  
1 5 10  
Gly Ile Thr Glu Leu  
15

25 (2) INFORMATION FOR SEQ ID NO:64:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 22 amino acids  
30 (B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Lys Lys Phe Asn Asn Phe Thr Val Ser Phe Trp Leu  
 1 5 10  
 Arg Val Pro Lys Val Ser Ala Ser His Leu  
 15 20

## (2) INFORMATION FOR SEQ ID NO:65:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 30 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Lys Lys Leu Arg Arg Leu Leu Tyr Met Ile Tyr Met  
 1 5 10  
 Ser Gly Leu Ala Val Arg Val His Val Ser Lys Glu  
 15 20  
 Glu Gln Tyr Tyr Asp Tyr  
 25 30

## (2) INFORMATION FOR SEQ ID NO:66:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Tyr Asp Pro Asn Tyr Leu Arg Thr Asp Ser Asp Lys  
 1 5 10

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Asp Arg Phe Leu Gln Thr Met Val Lys Leu Phe Asn  
 15 20

Arg Ile Lys  
 25

(2) INFORMATION FOR SEQ ID NO:67:

5 (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 24 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

10 (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Gly Ala Tyr Ala Arg Cys Pro Asn Gly Thr Arg Ala  
 1 5 10  
 15 Leu Thr Val Ala Glu Leu Arg Gly Asn Ala Glu Leu  
 15 20

(2) INFORMATION FOR SEQ ID NO:68:

20 (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

25 (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

30 Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln  
 1 5 10  
 Ser Leu Asp  
 15

(2) INFORMATION FOR SEQ ID NO:69:

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## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala  
1 5 10

Tyr Arg Pro Pro Asn Ala Pro Ile Leu  
15 20

## (2) INFORMATION FOR SEQ ID NO:70:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
1 5 10

Thr Ala Ser Ala Leu Tyr Arg Glu  
15 20

## (2) INFORMATION FOR SEQ ID NO:71:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys  
1 5 10  
Trp Gly Glu Leu Met Thr Leu Ala  
5 15 20

(2) INFORMATION FOR SEQ ID NO:72:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Trp Val Arg Asp Ile Ile Asp Asp Phe Thr Asn Glu  
1 5 10  
Ser Ser Gln Lys Thr  
20 15

(2) INFORMATION FOR SEQ ID NO:73:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Arg Ala Gly Arg Ala Ile Leu His Ile Pro Thr Arg  
1 5 10  
35

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Ile Arg Gln Gly Leu Glu Arg  
15

(2) INFORMATION FOR SEQ ID NO:74:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

Ala Val Ala Glu Gly Thr Asp Arg Val Ile Glu Val  
1 5 10

Leu Gln Arg Ala Gly Arg Ala Ile Leu  
15 20

(2) INFORMATION FOR SEQ ID NO:75:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:

Ala Leu Asn Ile Trp Asp Arg Phe Asp Val Phe Ser  
1 5 10

Thr Leu Gly Ala Thr Ser Gly Tyr Leu Lys Gly Asn  
15 20

Ser  
25

## (2) INFORMATION FOR SEQ ID NO:76:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

10 Asp Ser Glu Thr Ala Asp Asn Leu Glu Lys Thr Val  
 1 5 10  
 Ala Ala Leu Ser Ile Leu Pro Gly His Gly  
 15 20

## 15 (2) INFORMATION FOR SEQ ID NO:77:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 39 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20 (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

25 Glu Glu Ile Val Ala Gln Ser Ile Ala Leu Ser Ser  
 1 5 10  
 Leu Met Val Ala Gln Ala Ile Pro Leu Val Gly Glu  
 15 20  
 Leu Val Asp Ile Gly Phe Ala Ala Thr Asn Phe Val  
 25 30 35  
 30 Glu Ser Cys

## (2) INFORMATION FOR SEQ ID NO:78:

## 35 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Asp Ile Glu Lys Lys Ile Ala Lys Met Glu Lys Ala  
1 5 10  
Ser Ser Val Phe Asn Val Val Asn Ser  
15 20

(2) INFORMATION FOR SEQ ID NO:79:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp  
1 5 10

Glu Lys Ile Arg Ile  
15

(2) INFORMATION FOR SEQ ID NO:80:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Gly Leu Gln Gly Lys Ile Ala Asp Ala Val Lys Ala  
1 5 10  
Lys Gly

## (2) INFORMATION FOR SEQ ID NO:81:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Gly Leu Ala Ala Gly Leu Val Gly Met Ala Ala Asp  
1 5 10  
Ala Met Val Glu Asp Val Asn  
15

## (2) INFORMATION FOR SEQ ID NO:82:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Ser Thr Glu Thr Gly Asn Gln His His Tyr Gln Thr  
1 5 10  
Arg Val Val Ser Asn Ala Asn Lys  
15 20



## (2) INFORMATION FOR SEQ ID NO:83:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Cys Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys Ser  
1 5 10  
Pro Thr Cys  
15

## (2) INFORMATION FOR SEQ ID NO:84:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Cys Gly Glu Thr Tyr Lys Ser Thr Val Ser His Pro  
1 5 10  
Asp Leu Pro Arg Glu Val Val Arg Ser Ile Ala Lys  
15 20  
Cys  
25

## (2) INFORMATION FOR SEQ ID NO:85:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 18

(D) OTHER INFORMATION: /note= "Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 21

(D) OTHER INFORMATION: /note= "Arg"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 22

(D) OTHER INFORMATION: /note= "Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 26

(D) OTHER INFORMATION: /note= "Thr"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 27

(D) OTHER INFORMATION: /note= "Arg"

## (ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 30

(D) OTHER INFORMATION: /note= "Thr"

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Thr Ile Asn Lys Pro Lys Gly Tyr Val Gly Lys Glu

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Gly Gly Ile Ser Ile Ser Glu Ile Lys Gly Val Ile  
 15 20  
 Val His Lys Ile Glu Gly Ile Leu Phe Gly Gly Cys  
 25 30 35  
 Gly Gly Thr Tyr Gln Ser Arg Val Thr His Pro His  
 40 45  
 Leu Pro Arg Ala Leu Met Arg Ser Thr Thr Lys Cys  
 5 50 55 60

(2) INFORMATION FOR SEQ ID NO:86:

(i) SEQUENCE CHARACTERISTICS:

- 10 (A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp  
 1 5 10  
 Glu Lys Ile Arg Ile  
 20 15

(2) INFORMATION FOR SEQ ID NO:87:

(i) SEQUENCE CHARACTERISTICS:

- 25 (A) LENGTH: 62 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp  
 1 5 10  
 Glu Lys Ile Arg Ile Lys Lys Lys Lys Ile Ile Thr  
 35 15 20

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Ile Thr Arg Ile Ile Thr Ile Ile Thr Yhr Ile Asp  
 25 30 35  
 Lys Cys Gly Glu Thr Tyr Tyr Ser Arg Val Thr His  
 40 45  
 Pro His Leu Pro Lys Asp Ile Val Arg Ser Ile Ala  
 50 55 60  
 Lys Cys

(2) INFORMATION FOR SEQ ID NO:88:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

Thr Ile Asn Lys Pro Lys Gly Tyr Val Gly Lys Glu  
 1 5 10  
 Lys Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile  
 15 20  
 Thr Ile Ile Thr Tyr Ile Asp Lys Cys Gly Glu Thr  
 25 30 35  
 Tyr Tyr Ser Arg Val Thr His Pro His Leu Pro Lys  
 40 45  
 Asp Ile Val Arg Ser Ile Ala Lys Cys  
 50 55

(2) INFORMATION FOR SEQ ID NO:89:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

Ile Ser Leu Thr Glu Ile Arg Thr Val Ile Val Thr  
 1 5 10  
 Arg Leu Glu Thr Val Leu Phe  
 15

## (2) INFORMATION FOR SEQ ID NO:90:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 45 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

Ile Ser Leu Thr Glu Ile Arg Thr Val Ile Val Thr  
 1 5 10  
 Arg Leu Glu Thr Val Leu Phe □Lys Cys Gly Glu Thr  
 15 20  
 Tyr Tyr Ser Arg Val Thr His Pro His Leu Pro Lys  
 25 30 35  
 Asp Ile Val Arg Ser Ile Ala Lys Cys  
 40 45

## (2) INFORMATION FOR SEQ ID NO:91:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 63 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp  
 1 5 10  
 Glu Lys Ile Arg Ile □Lys Ile Ser Leu Thr Glu Ile  
 15 20  
 Arg Thr Val Ile Val Thr Arg Leu Glu Thr Val Leu  
 25 30 35  
 Phe □Lys Cys Gly Glu Thr Tyr Tyr Ser Arg Val Thr  
 40 45  
 His Pro His Leu Pro Lys Asp Ile Val Arg Ser Ile  
 50 55 60  
 Ala Lys Cys

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